

REMARKS

This responds to the Office Action mailed on January 11, 2006.

Claims 1, 9, 10, 12, 16, 17, 30, 38, and 41 are amended, claims 3-4, 6-8, 11, 13 -15, 18 - 29, 32-33, 35 - 37, and 40 are canceled without prejudice or disclaimer, and claim 42 is added; as a result, claims 1, 2, 5, 9, 10, 12, 16, 17, 30, 31, 34, 38, 39 and 41-42 are now pending in this application.

Claim Objections

Claims 7-8 were objected to on contention quoted herein that following informalities were present: "It appears that applicant is claiming a further buffer in addition to the buffer recited in claim 1. It is suggested to clearly recite the additional buffer layer so that there is no confusion or indefinite of what applicant intends to claim. Appropriate correction is required."

Applicant has amended claims 7-8 as suggested by the Examiner and claims 7-8 are now believed to be allowable

§112 Rejection of the Claims

Claims 8-9, 12, 37-38, and 41 were rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Applicants respectfully traverse the rejection for the reasons stated below.

Claims 8 and 37 have been cancelled.

Applicants have considered the position stated in the Office Action remarks relating to the rejection as to claims 9, 12, 38 and 41 and primarily to the manner in which the claimed spacer and gap are related. Applicant points out that the spacer in question is not the spreader sidewall 19 but rather the spacer 28 shown in Fig. 2 that is the element which helps to assure a positive force urging the tips of the nanotubes 25 into the appropriate surfaces. Notwithstanding the explanation provided herein as to spacer 28, Applicants have reviewed and amended the rejected claims as indicated, seeking to further clarify them.

Reconsideration and allowance of claims 9, 12, 38 and 41 is respectfully requested.

§102 Rejection of the Claims

Claims 1-8, 13-14, 16-18, and 30-37 were rejected under 35 USC § 102(e) as being anticipated by Dubin (U.S. 2004/0265489 A1) hereinafter, "Dubin '489." Applicants respectfully traverses the rejection for the reasons stated below.

Dubin '489 relates to a composite nanotube structure having carbon nanotubes grown in the pores of a porous anodized portion or layer of metal formed on either a sacrificial layer or a die. In comparing Dubin '489 to what is claimed in amended claim 30, it can be seen that while the Dubin '489 structure has nanotubes formed in pores of a porous metal oxide layer, the structure does not include a buffer layer on the surface of the heat spreader and a further buffer layer interposed between the nanotube interface material and the die as claimed in amended claim 30. Reconsideration and allowance of amended in dependent claims 1, 16 30 and their respective dependent claims is respectfully requested.

Claims 1-5, 7-13, 15, 30-34, and 36-41 were rejected under 35 USC § 102(e) as being anticipated by Dubin (U.S. 2004/0150100 A1) hereinafter "Dubin '100". Applicants respectfully traverse the rejection for the reasons stated below.

Dubin '100 relates to forming a layer of porous material on a microelectronic die and growing a plurality of nanotubes in pores of the porous material. In comparing Dubin '100 to what is claimed in amended claim 30, it is noted that Dubin '100 does not show a buffer layer formed on a surface of the heat spreader and a further buffer layer interposed between the thermal interface material and the die as claimed in amended claim 30. Reconsideration and allowance of amended in dependent claims 1, 16, 30 and their respective dependent claims is respectfully requested.

AMENDMENT AND RESPONSE UNDER 37 CFR § 1.111

Serial Number: 10/612,711

Filing Date: June 30, 2003

Title: THERMAL INTERFACE APPARATUS, SYSTEMS, AND METHODS

Assignee: Intel Corporation



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Conclusion

Applicant respectfully submits that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney, Chuck Steffey, at (612) 373-6970 to facilitate prosecution of this application.


If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

YUEGANG ZHANG ET AL.

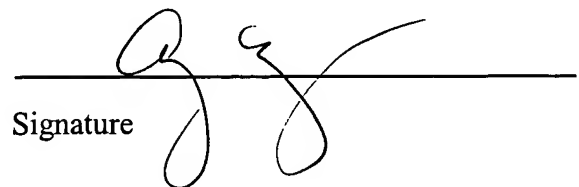
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Date 12 June '06

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: MS Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 12th day of June, 2006.

Amy Moriarty
Name


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